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(54) Section member system for window and door frames in general, having thermal insulation means.

(57) The inner (1) and outer (2) bodies are intercoupled by thermally insulating means, consisting of coupling baffles (3), engaging in guiding seats longitudinally extending on the opposite faces of the outer (2) and inner (1) bodies respectively.

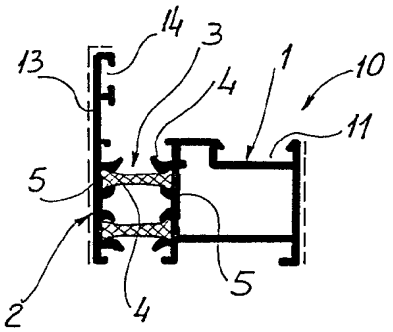


Fig. 1

EP 0 320 463 A1

Description

SECTION MEMBER SYSTEM FOR WINDOW AND DOOR FRAMES IN GENERAL, HAVING THERMAL INSULATION MEANS

BACKGROUND OF THE INVENTION

The present invention relates to a section member system for window and door frame in general, with thermal insulation means.

As is known, for making window and door frames in general, starting from conventional aluminium section members, a very felt problem is that of reducing the heat losses toward the outside environment.

This problem is partially solved by using the so-called double glasses which extend on the greater portion of the surface of the window or door frame and have a good thermal insulation coefficient.

A problem, however, which must be still solved in a satisfactory way is that of the thermal conduction, between the inside and outside environment, at the metal portions of the window frame, consisting of section members, which provide a thermal bridge because of the good heat conductivity of the used metal material, that is aluminium.

In order to solve this problem there have been already introduced on the market aluminium window and door frame section members, including the so-called thermal cutting characteristic, that is an interruption of the metal material of the section member between the inside and outside thereof.

Presently adopted approaches, however, are not able of satisfactorily solving this problem since they, in addition to an interruption of the metal surface of the section member, represent a mechanical weakening element in the obtained window or door frame, with the obvious drawbacks deriving therefrom.

Other prior art section members of the above illustrated type have a good mechanical resistance but, in order to achieve it, the section members are provided with points thereat there is metal continuity between the inner surface and outer surface of the section member itself, with a consequent great reduction of the thermal insulation characteristics.

SUMMARY OF THE INVENTION

Accordingly, the task of the present invention is to overcome the above mentioned drawbacks, by providing a new section member system for making window and door frames in general, having thermal insulation means, that is means adapted to provide an efficient thermal cut, absolutely preventing a metal continuity between the outer and inner surface of the section member, while preserving a satisfactory mechanical strength of the section members and window and door frames made thereby.

Within the scope of the above mentioned task, a main object of the present invention is to provide a section member system which can be quickly and easily assembled without the use of skilled operators and which, moreover, is competitive from a mere economic standpoint.

According to one aspect of the present invention, the above mentioned task and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a section member system for making window and door frames in general, with thermal insulation means, according to the invention, characterized in that said section member system comprises fixed frame section members and movable frame section members, having an inner body defining the inwardly facing surface and an outer body defining the outwardly facing surface, and intercoupled by thermally insulating means, consisting of coupling baffles, engaging in guide seats longitudinally extending on the opposite faces of said outer body and said inner body of said section members respectively.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the invention will become more apparent hereinafter from the following detailed description of some preferred embodiments thereof, which are illustrated, by way of an indicative but not limitative example, in the accompanying drawings, where:

Figures 1 to 5 are schematic cross-sectional views showing fixed frame section members according to the invention;

Figure 6 to 8 show movable frame section members, of the type adapted for making window frames;

Figures 9 and 10 respectively show movable frame section members adapted for making door frames;

Figures 11, 12 and 13 show section members for making uprights, cross members, bands and base members;

Figure 14 shows a section member for making balcony doors;

Figure 15 shows a section member for making angle structural zones;

Figures 16, 17 and 18 shows auxiliary section members;

Figures 19 and 20 show glass plate restraining section members;

Figures 21 and 22 show gasket members;

Figure 23 schematically shows a window frame consisting of a single-wing window, made by using the section members of the preceding Figures;

Figure 24 is a cross-sectional view taken along the line XXIV-XXIV of Figure 23; and

Figure 25 shows a cross-sectional view taken along the line XXV-XXV of Figure 23.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to the Figures of the accompanying drawings, the section member system for making window and door frames in general, including thermal insulation means, according to the invention, is characterized in that it comprises fixed frame section members and movable frame section members, which consist of an inner body, defining the inwardly facing surface, indicated generally at the reference number 1, and an outer body, defining the outwardly facing surface, indicated generally at the reference number 2.

The inner and outer bodies are intercoupled by thermally insulating means, consisting of coupling baffles 3, each whereof has a flat body 4 ending, at the edges thereof, with extended portions 5 provided for engaging in corresponding seats 6 formed on the surfaces of the opposite faces of said inner and outer bodies.

Advantageously, the outer and inner bodies are intercoupled by means of a pair of baffles 3, which are arranged with an adjoining parallel relationship.

Figure 1 shows a fixed frame section member 10, having a box-like inner body 1 provided with a side seat 11; the outer body 2 is provided with a top leg 13 having a seat 14 adapted to receive a corresponding gasket member.

Figure 2 illustrates a section member 21 the inner body 1 of which has a bottom leg 22, the outer body 2 having a shape analogous to that of the section member 10.

Figure 3 shows a section member, overally indicated at 23, the outer body 2 of which is provided with a box-like portion indicated at 24 having an outer leg 25, the inner body 1 having a substantially flat configuration and being provided with a ridge 26 at its end region.

Figure 4 shows a fixed frame section member 28, having an inner body 1 provided with a bottom edge 29, which is opposite to a bottom leg 30 defined by the outer body 2 also provided with a top leg 31.

Figure 5 shows a section member 33 of like shape, with the difference that the inner body 1 has no leg or edge 29.

Figure 6 shows a movable frame section member for making window frames, indicated overally at the reference number 40, the inner body 1 of which is provided with projecting lugs 41 and the outer body 2 of which is provided with a pair of opposite legs 42 and 43; moreover, one of the baffles 3 is provided with a side lug 44.

The section member 45 shown in Figure 7 is also provided for making a movable frame for windows and is provided with an inner body 1 having a bottom leg 46, its outer body being provided with a single leg 47.

The window movable frame 48 shown in Figure 8 is conceptually analogous to that shown in figure 6, with the difference that it is provided with a greater size inner body and a box-like portion 49 on the outer body 2.

Figure 9 shows a door movable frame section member, indicated at 50, having an inner body 1, with a bottom ridge 51 and an outer body 2 provided with a double leg 52.

The section member 53, which can be used for making door frames shown in Figure 10, has an inner body 1 with a leg 54, whilst the outer body 2 thereof is provided with a leg 55 and a step ridge 56.

Figure 11 shows a cross-section member 60 having a substantially rectangular shape inner body 1 with a projecting edge 62, which projects towards the inner face thereof; the outer body 2 is provided with a top leg 63 and a bottom edge 64.

Figure 12 shows a upright section member 67 having opposite seats 68, on its inner body 1, and having an outer body 2 including a double leg 69.

The section member 70 shown in Figure 13 has an inner body 1, like that shown in Figure 12, with a variation on the outer body which is provided with a broad box-like region indicated at 71.

Figure 14 shows a section member for making balcony door frame, having a quadrangular shape inner body with opposite seats 76, its outer body 2 being provided with a central box-like portion 77 with a pair of opposite legs 78.

Figures 15 illustrates a section member for making structural angle or corner regions, indicated overally at the reference number 80, which has a tapering inner body 1 for making said structural corner regions, its outer body 2 having a box- like triangular shape; advantageously, in this case, between the baffles 3 there is introduced a thermal insulating foam material, indicated at 82.

Figure 16 shows an angle section member 85 which can be used as an auxiliary element and has, on a leg thereof, a seat 86 for receiving a corresponding gasket.

Figure 17 shows a base section member 87, of substantially C-shape, and Figure 18 shows another auxiliary section member 88 of wedge shape.

Figures 19 and 20 shows two glass restraining section members, indicated respectively at 90 and 91 which have different widths depending on the size of the glass plate to be restrained and being provided with a respective seat 92 for receiving glass gaskets.

Figure 21 shows a gasket 95 which can be used on the inner abutment of the movable frame, while Figure 22 shows a tightness central gasket indicated at 96.

Figures 23 to 25 schematically show one possible embodiment of a frame which can be made by using the above disclosed section members; obviously the type of frame being made will come within a broad range and, accordingly, Figures 23 to 25 are merely presented for illustrative purposes.

From the above disclosure it should be apparent that the section member system according to the invention fully achieves the intended task and objects.

In particular, the fact is to be pointed out that a section member system has been provided including section members having thermally insulating means which, moreover, have a good mechanical strength, which is due to the stable coupling obtained by means of the two thermally insulating

material baffles stably coupling the inner body and outer body of the several section members.

The invenzione, as disclosed is susceptible to several variations and modifications all of which will come within the scope of the invention.

Moreover all of the details can be replaced by other tecnically equivalent element.

In practicing the invention, the used materials, though the best results have been obtained by using aluminium, as well as the contingent size and shapes can be any according to requirements.

Claims

1. A section member system for making window and door frames in general, having thermal insulation means, characterized in that said section member system comprises fixed frame section members and movable frame section members, having an inner body defining the inwardly facing surface and an outer body defining the outwardly facing surface, being intercoupling by thermally insulating means consisting of coupling baffles, engaging in guide seats extending longitudinally on the opposite faces respectively of the outer body and the inner body of said section members.

2. A section member system according to the preceding Claim, characterized in that the coupling baffles comprises a substantially flat central portion with enlarged portions at the edges thereof.

3. A section member system according to the preceding Claims, characterized in that each said section member comprises, on the opposite faces of said outer body and inner body, a pair of spaced parallel guide seats.

4. A section member system according to one or more the preceding Claims, characterized in that said guide seats have a substantially mating shape with respect to said enlarged portions provided at said coupling baffle edges.

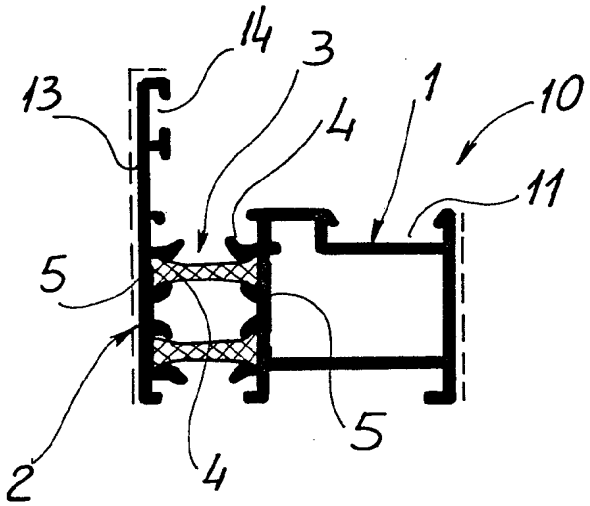


Fig. 1

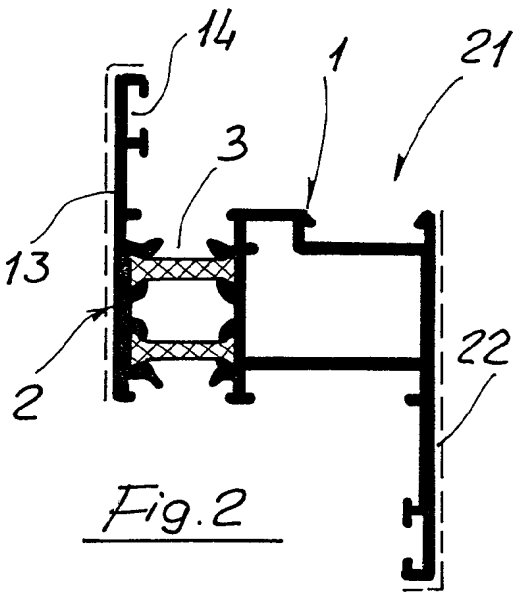


Fig. 2

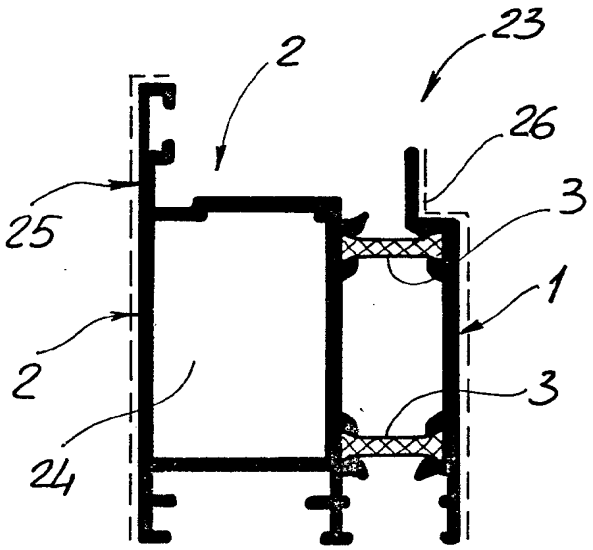
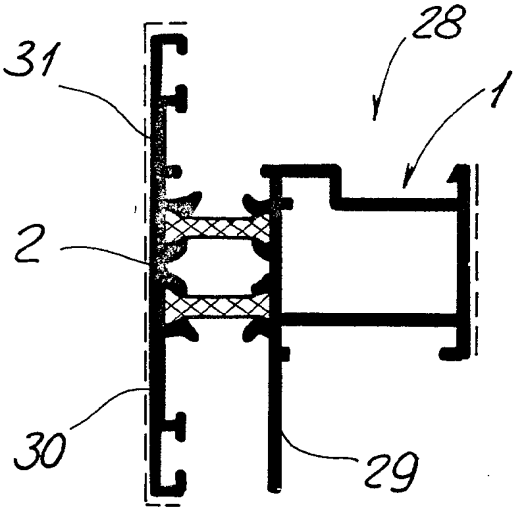


Fig. 3

Fig. 4



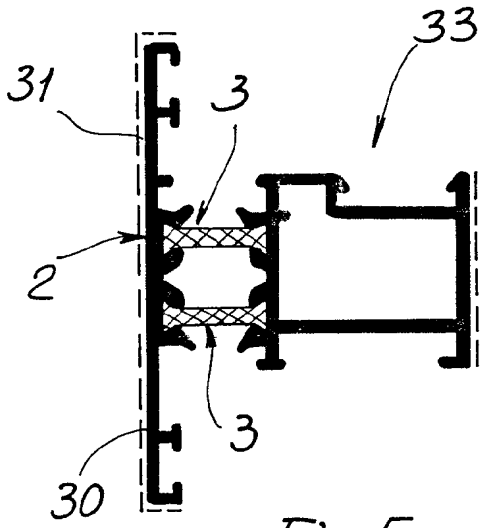


Fig.5

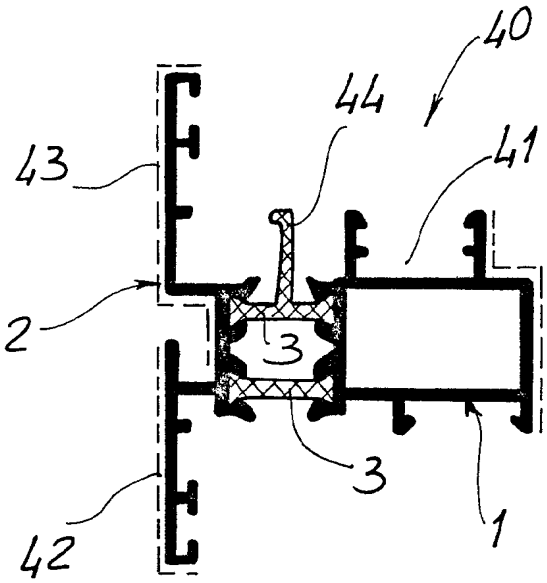


Fig.6

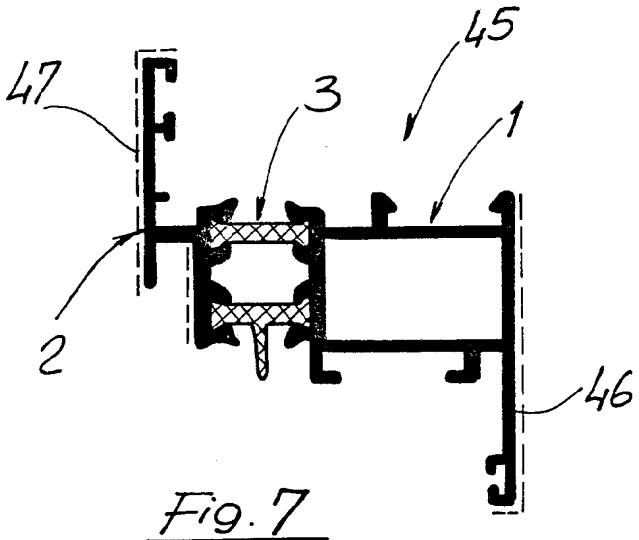
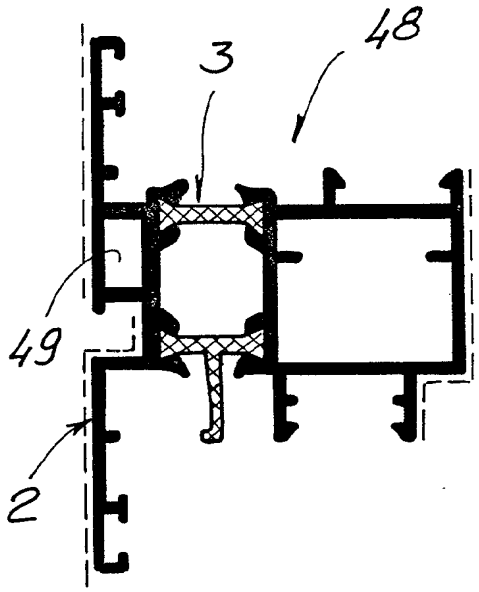


Fig.7

Fig.8



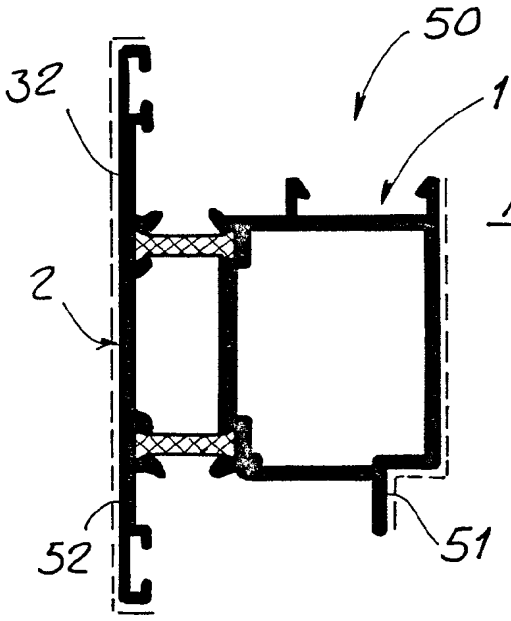


Fig.9

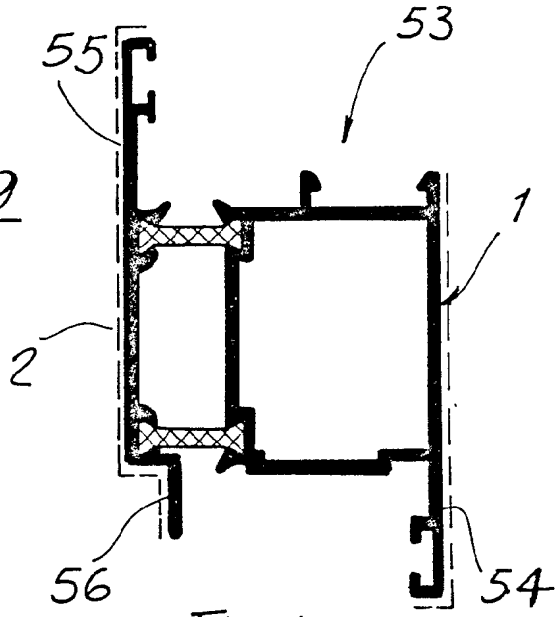


Fig.10

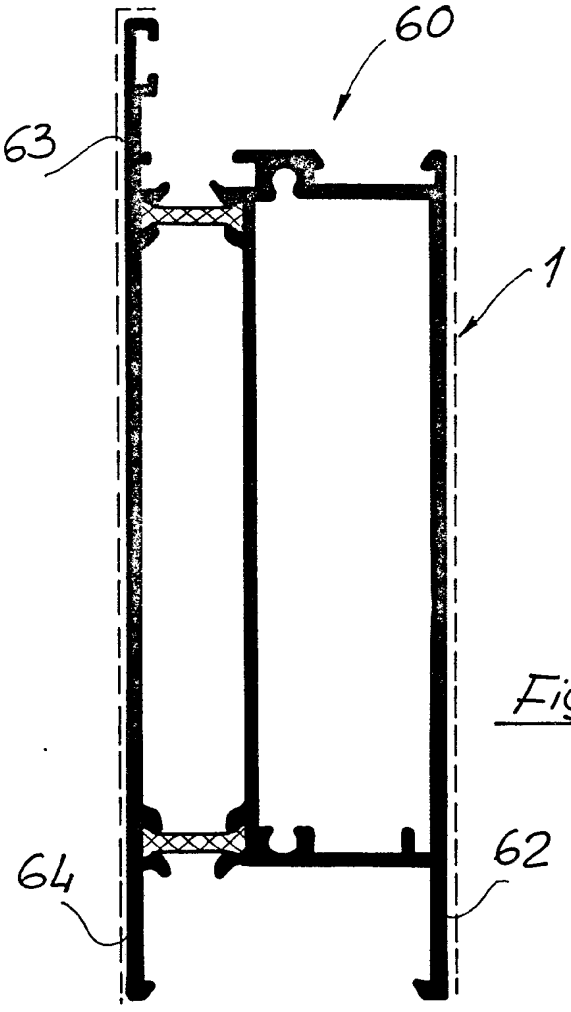


Fig.11

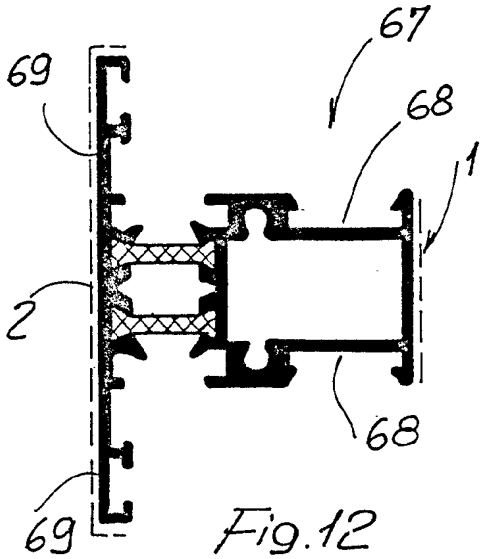


Fig.12

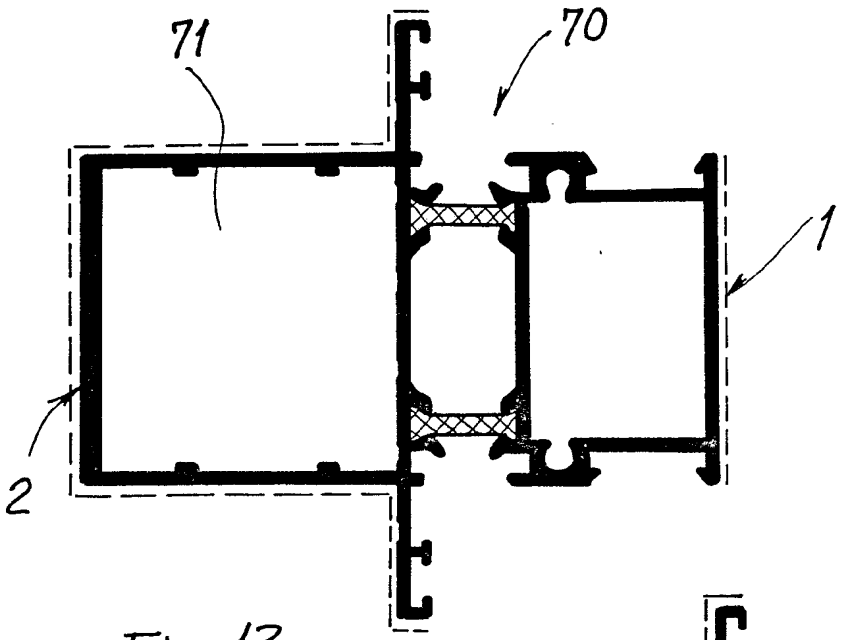


Fig. 13

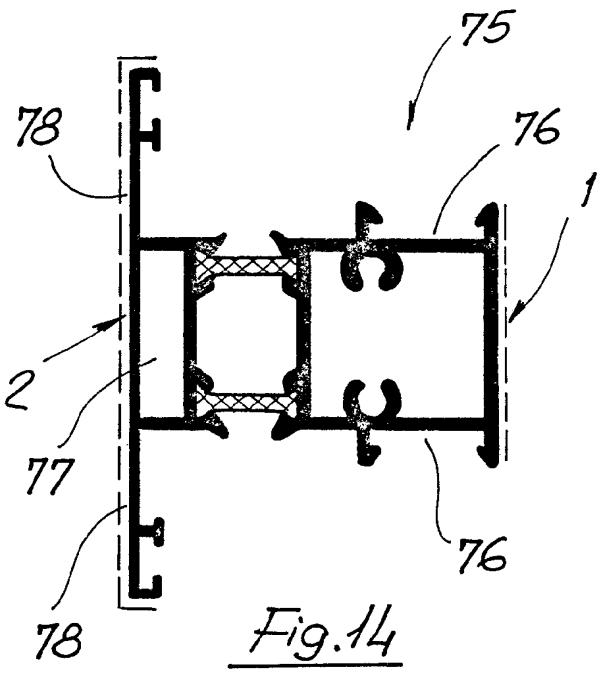


Fig. 14

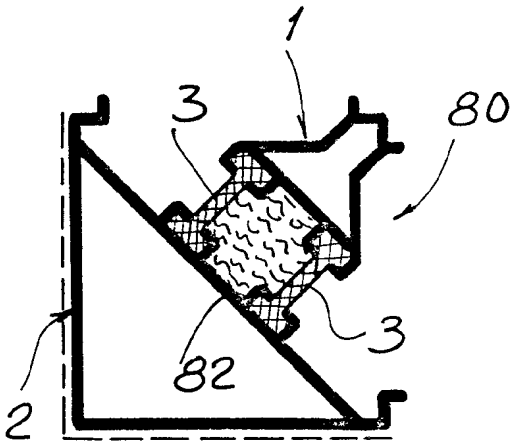


Fig 15

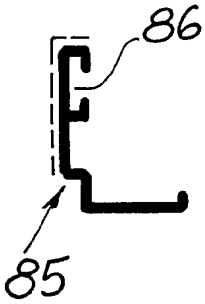


Fig. 16

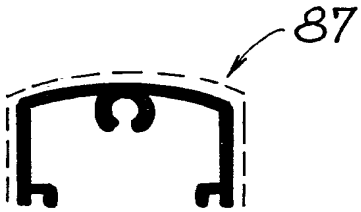


Fig. 17

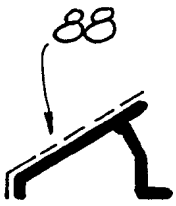


Fig.18

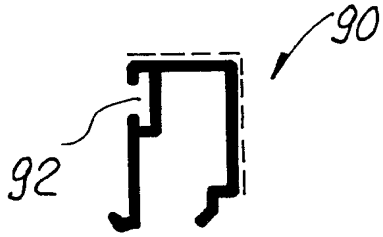


Fig.19

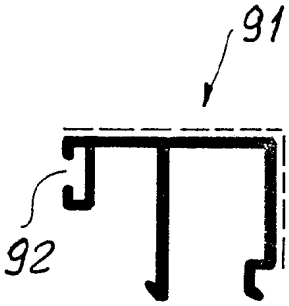


Fig.20

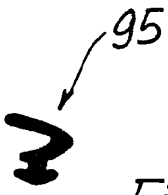


Fig.21

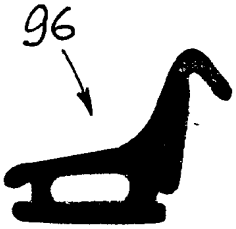


Fig.22

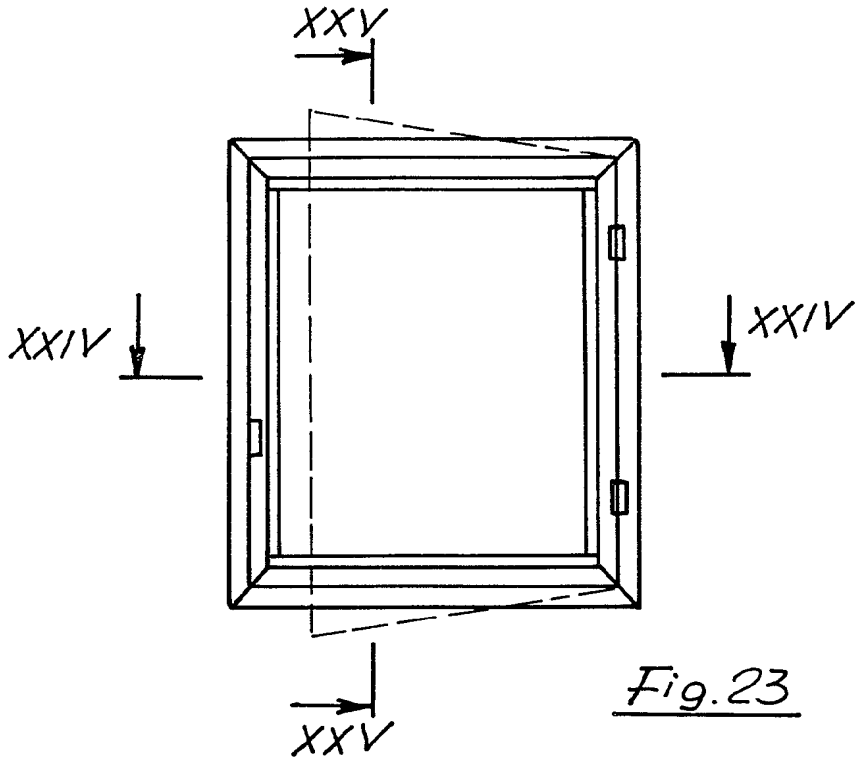


Fig.23

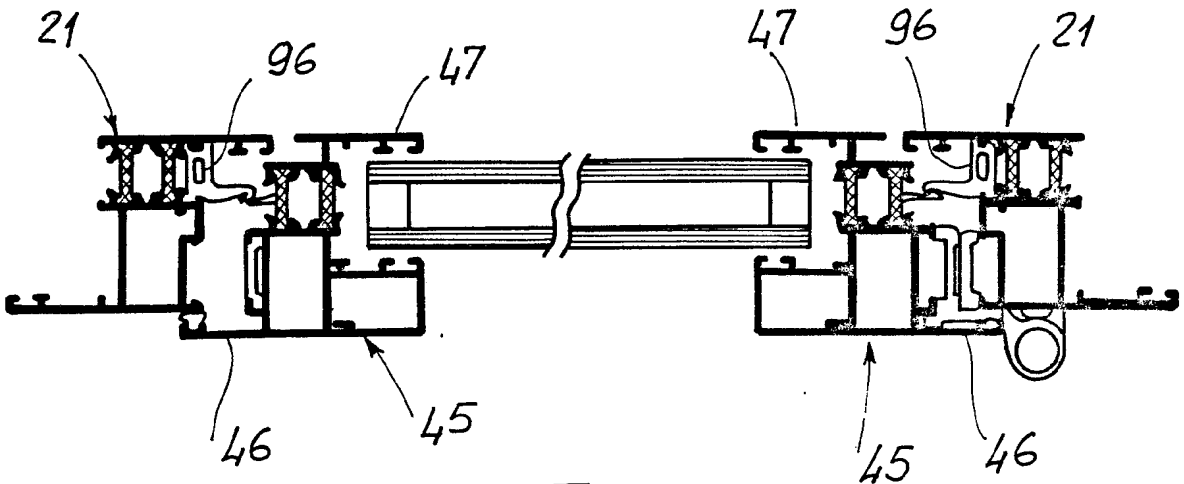


Fig.24

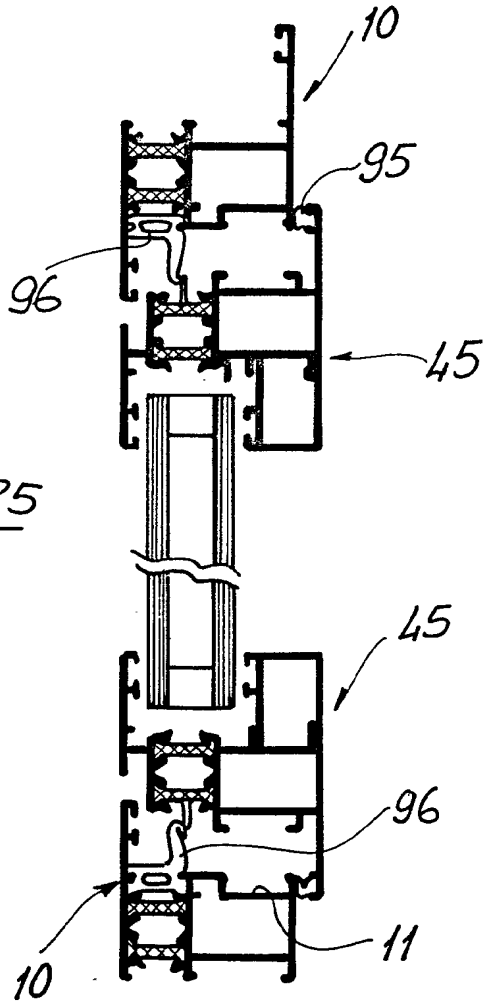


Fig.25

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 88 83 0512

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	FR-A-1 457 853 (INDAL) * Page 2, column 1, line 43 - column 2, line 26; page 2, column 2, line 54 - page 3, column 1, line 15; figures 1-5 * ---	1-4	E 06 B 3/26
X	DE-A-3 412 530 (KELLER) * Page 5, line 29 - page 7, line 9; figure 1 * ---	1-4	
X	CH-A- 662 166 (LA SEMILAVORATI) * Page 2, column 2, lines 18-41; figures 1,2 * ---	1-4	
X	DE-A-2 207 282 (NAHR) * Page 2, line 3 - page 4, line 16; figures 1-5 * ---	1-4	
X	DE-A-2 235 392 (SCHÖNINGER) * Claims 1-8; figures 1-13 * -----	1-4	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4) E 06 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	17-03-1989	DEPOORTER F.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
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E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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